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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/667,396	09/23/2003	Takeshi Yoneda	032405R156	9368
441	7590	10/10/2006	EXAMINER	
SMITH, GAMBRELL & RUSSELL 1850 M STREET, N.W., SUITE 800 WASHINGTON, DC 20036			MANCHO, RONNIE M	
			ART UNIT	PAPER NUMBER
			3663	

DATE MAILED: 10/10/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

10/667,396

Applicant(s)

YONEDA, TAKESHI

Examiner

Ronnie Mancho

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 20 July 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-12,26 and 29 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-12,26 and 29 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO/SB/08)  
Paper No(s)/Mail Date 7-20-06.
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_\_.

## DETAILED ACTION

### *Election/Restrictions*

1. Applicant's election without traverse of claims 1-12, 26, 29 in the reply filed on 7/20/06 is acknowledged.
2. Claims 13-24, 28, 30 are withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to a nonelected non elected invention, there being no allowable generic or linking claim. Election was made **without** traverse in the reply filed on 7/20/06.

### *Claim Objections*

3. Claim 1 is objected to because of the following informalities: In claim 1, last line, the applicant is advised to add --units-- after "feed forward and feedback control" for clarity.

Appropriate correction is required.

### *Claim Rejections - 35 USC § 112*

4. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

5. Claims 1-12, 26 and 29 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

In claims 1-12, 26, 29, the applicant recites "a *feedback* control clutch torque computing unit", and "a *feed forward* unit for computing the clutch torque". It is not clear what all is meant and encompassed by the terms "feed forward" and "feedback" in the above phrases. Applicant

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fig. 2 shows a unit 52 which applicant labels "feedback control clutch torque computing unit".

The applicant further labels unit 53 as a "feed forward control clutch torque computing unit".

Units 52 and 53 both feed a signal each to another unit 55. One skilled in the art will not be able to ascertain the distinction between the claimed "feed forward" and "feedback" units as disclosed by the applicant.

***Claim Rejections - 35 USC § 103***

6. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 103 that form the basis for the rejections under this section made in this Office action:

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

8. Claims 1-12, 26, and 29 are rejected under 35 U.S.C. 103(a) as being unpatentable over Rodrigues et al (6047231) in view of Ozaki et al (US 2002/0005077)

Regarding claim 1, Rodrigues (abstract, figs. 1-4; col. 2, lines 54 to col. 3, lines 1-40) disclose a differential limiting control apparatus for a vehicle having a clutch unit 135 interposed between one rotational shaft 132 and another rotational shaft 133 (fig. 1) for variably changing a driving force transmission between the one rotational shaft and the other rotational shaft, comprising:

a tire diameter difference computing unit for computing diameter difference of a tire (col. 9, lines 1-21).

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Rodrigues disclose the limitations above, but did not particularly disclose “a feed forward unit for computing the clutch torque”, “a feedback control clutch torque computing unit”, and “a clutch torque computing unit for computing a final clutch torque”. However, Ozaki et al (sections abstract, 0021, 0025, 0031, 0054, 0057, 0063-0080; figs, 1-4, 8-13) teach of:

a feedback control clutch torque computing unit for computing the clutch torque of the clutch unit based on vehicle behaviors through feedback control (sections abstract, 0021, 0025, 0031, 0054, 0057, 0063-0080; figs, 1-4, 8-13).

a feed forward unit for computing the clutch torque based on said behaviors through a feed forward control, the feed forward control unit computes the clutch torque based on a throttle opening (sections abstract, 0021, 0025, 0031, 0054, 0057, 0063-0080; figs, 1-4, 8-13); and

a clutch torque computing unit for computing a final clutch torque by changing a ratio of said torque obtained through the feedback control and the feed forward control according the diameter difference of the tire so as to suppress a wheel slippage by setting a ratio of clutch torque values between the feed forward and feedback control units (sections abstract, 0021, 0025, 0031, 0054, 0057, 0063-0080; figs, 1-4, 8-13).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Rodrigues as taught by Ozaki for the purpose of preventing shock from being given to a driver (sec 0015)

Regarding claim 2, Rodrigues (abstract, figs. 1-4; col. 2, lines 54 to col. 3, lines 1-40; col. 4-9) disclose the differential limiting control apparatus of claim 1, wherein:

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the feedback control clutch torque computing unit has a target differential speed setting unit for setting a target differential speed between the one rotational shaft and the other rotational shaft;

an actual differential speed detecting unit for detecting an actual differential speed between the one rotational shaft and the other rotational shaft; and

a clutch torque computing unit for computing an engagement force of the clutch unit by obtaining a deviation between the target differential speed and the actual differential speed with a switching function by using at least a polarity related to an integral term of the deviation and by applying a sliding mode control.

Regarding claim 3, Rodrigues (abstract, figs. 1-4; col. 2, lines 54 to col. 3, lines 1-40; col. 4-9) in view of Ozaki disclose the differential limiting control apparatus as set forth in claim 1, wherein:

the clutch torque computing unit reduces the ratio of said clutch torque obtained through the feed forward control as the diameter difference of the tire increases.

Regarding claim 4, Rodrigues (abstract, figs. 1-4; col. 2, lines 54 to col. 3, lines 1-40; col. 4-9) in view of Ozaki disclose the differential limiting control apparatus as set forth in claim 1, wherein:

the tire diameter difference computing unit calculates the diameter difference based on at least an actual differential speed between the one rotational shaft and the other rotational shaft when the vehicle is running substantially straight and when slippage is so difficult to be detected between a road and wheels.

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Regarding claim 5, Rodrigues (abstract, figs. 1-4; col. 2, lines 54 to col. 3, lines 1-40; col. 4-9) in view of Ozaki disclose the differential limiting control apparatus as set forth claim 1, wherein:

the clutch unit is interposed between a front axle and a rear axle.

Regarding claim 6, Rodrigues (abstract, figs. 1-4; col. 2, lines 54 to col. 3, lines 1-40; col. 4-9) in view of Ozaki disclose the differential limiting control apparatus as set forth claim 2, wherein:

the clutch unit is interposed between a front axle and a rear axle.

Regarding claim 7, Rodrigues (abstract, figs. 1-4; col. 2, lines 54 to col. 3, lines 1-40; col. 4-9) in view of Ozaki disclose the differential limiting control apparatus as set forth claim 3, wherein:

the clutch unit is interposed between a front axle and a rear axle.

Regarding claim 8, Rodrigues (abstract, figs. 1-4; col. 2, lines 54 to col. 3, lines 1-40; col. 4-9) in view of Ozaki disclose the differential limiting control apparatus as set forth claim 4, wherein:

the clutch unit is interposed between a front axle and a rear axle.

Regarding claim 9, Rodrigues (abstract, figs. 1-4; col. 2, lines 54 to col. 3, lines 1-40; col. 4-9) in view of Ozaki disclose the differential limiting control apparatus as set forth claim 1, wherein:

the clutch unit limits a differential action of a differential interposed between left and right wheel.

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Regarding claim 10, Rodrigues (abstract, figs. 1-4; col. 2, lines 54 to col. 3, lines 1-40; col. 4-9) in view of Ozaki disclose the differential limiting control apparatus as set forth Claim 2, wherein:

The clutch limits a differential action of a differential interposed between left and right wheel.

Regarding claim 11, Rodrigues (abstract, figs. 1-4; col. 2, lines 54 to col. 3, lines 1-40; col. 4-9) in view of Ozaki disclose the differential limiting control apparatus as set forth Claim 3, wherein:

The clutch limits a differential action of a differential interposed between left and right wheel.

Regarding claim 12, Rodrigues (abstract, figs. 1-4; col. 2, lines 54 to col. 3, lines 1-40; col. 4-9) in view of Ozaki disclose the differential limiting control apparatus as set forth Claim 4, wherein:

The clutch limits a differential action of a differential interposed between left and right wheel.

Regarding claim 26, Rodrigues (abstract, figs. 1-4; col. 2, lines 54 to col. 3, lines 1-40; col. 4-9) in view of Ozaki disclose the apparatus as set forth in claim 1, further comprising a brake switch, and

when an On signal is inputted from the brake switch, the clutch torque obtained through the feed forward control is made to be zero.



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Regarding claims 29, Rodrigues (abstract, figs. 1-4; col. 2, lines 54 to col. 3, lines 1-40; col. 4-9) in view of Ozaki disclose a final clutch torque which involves the claimed equation as disclosed by the applicant.

**MPEP 2114**

9. The statements of intended use or field of use, "to effectively suppress", "adequately setting", see claims 1 and 13; "computes", see claim 25; "when ON is inputted", "is made zero", see claim 26; and the equation  $(T_{lsd} = R_{tr} T_{lsdff} + (1 - R_{tr}) \cdot T_{lsdfb})$  etc clauses are essentially method limitations or statements of intended or desired use. Thus, these claims as well as other statements of intended use do not serve to patentably distinguish the claimed structure over that of the reference. See *In re Pearson*, 181 USPQ 641; *In re Yanush*, 177 USPQ 705; *In re Finsterwalder*, 168 USPQ 530; *In re Casey*, 512 USPQ 235; *In re Otto*, 136 USPQ 458; *Ex parte Masham*, 2 USPQ 2nd 1647.

See MPEP § 2114 which states:

A claim containing a "recitation with respect to the manner in which a claimed apparatus is intended to be employed does not differentiate the claimed apparatus from the prior art apparatus" if the prior art apparatus teaches all the structural limitations of the claim. *Ex parte Masham*, 2 USPQ 2nd 1647

Claims directed to apparatus must be distinguished from the prior art in terms of structure rather than functions. *In re Danly*, 120 USPQ 528, 531.

Apparatus claims cover what a device is not what a device does. *Hewlett-Packard Co. v. Bausch & Lomb Inc.*, 15 USPQ2d 1525, 1528.

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As set forth in MPEP § 2115, a recitation in a claim to the material or article worked upon does not serve to limit an apparatus claim.

***Response to Arguments***

10. Applicant's arguments filed 7/20/06 have been fully considered but they are not persuasive.

Applicant's arguments with respect to withdrawn claims 13-24, 28, 30 are moot.

Applicant's arguments are further moot in view of a newly found prior art.

With respect to claims 1-12, 26, and 29, the applicant has amended the claims and argues that the prior art does not disclose “a *feedback* control clutch torque computing unit”, and “a *feed forward* unit for computing the clutch torque”.

It is noted that the above limitation has 112 issues as pointed out above. Applicant's disclosure does not provide the meaning of the above phrases nor does the applicant provide a distinction between the above limitations. The prior art disclose an electronic unit for computing a clutch torque. The prior art may not have used the exact words as the applicant, but it is not a requirement for the prior art to use the same words as the applicant in order to determine patentability.

It is believed that the prior art anticipates the claims. The rejection therefore stands.

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*Communication*

11. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ronnie Mancho whose telephone number is 571-272-6984. The examiner can normally be reached on Mon-Thurs: 9-5.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jack Keith can be reached on 571-272-6878. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Ronnie Mancho  
Examiner  
Art Unit 3663

October 1, 2006

  
JACK KEITH  
SUPERVISORY PATENT EXAMINER